

Claims:

1. A composition having laser marking properties comprising a polymeric material, mica or a micaceous material and a metal sulphide.
2. A composition as claimed in claim 1, wherein there is a coating comprising a metal oxide on part or whole of the surface of the mica or micaceous material.
3. A composition as claimed in claim 2, wherein the metal oxide comprises antimony oxide, titanium oxide and/or tin oxide.
4. A composition according to any one of claims 1 to 3, wherein the metal sulphide is selected from the group consisting of cadmium sulphide, iron sulphide, zinc sulphide and mixed sulphides comprising cadmium, iron or zinc as one of the metals.
5. A composition according to claim 4, wherein the metal sulphide is zinc sulphide.
6. A composition according to any one of claims 1 to 5, wherein the mica or micaceous material is present in an amount ranging from 0.05 to 2 percent by weight, preferably from 0.1 to 0.5 percent by weight, most preferred 0.3 ± 0.1 percent by weight, based on the total weight of the composition.
7. A composition according to any one of the previous claims, wherein the polymeric material is a resin selected from the group consisting of polyolefins, polyurethanes, polycarbonates, polyesters, rubber modified monovinylidene, aromatic resins, polyetherimides, polyamides, polyimides, polyester carbonates, polyphenylene sulphides, polyamideimides, polyesteramides, polyether esters, polyetherimide esters, polyarylates, polymethylpentenes, polysulfones, polyethersulfones, polystyrenes, rubber modified high impact polystyrenes, polyoxymethylene, styrene maleic anhydride copolymers, acrylonitrile styrene acrylate copolymers, acrylonitrile butadiene styrene copolymers (ABS), polyphenylene ethers, polyether ketones, chlorinated polymers, fluorinated polymers, and liquid crystal polymers, preferably from the group consisting of

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polyurethanes, high impact polystyrene, polyamides, ABS, polycarbonates and rubber modified monovinylidene aromatic resins and blends thereof, most preferred is a thermoplastic polyurethane resin.

8. A composition according to any one of claims 1 to 7, wherein the amount of metal sulphide in the composition is sufficient to produce a dark marking on an article moulded from the said composition when it has been irradiated with a laser beam at a radiation level of 5-50A at a frequency of 1 - 100 kHz in the range of 500 - 2100 nm.
9. A composition according to claim any one of claims 1 to 8, wherein the amount of metal sulphide ranges from 0.05 to 3 percent by weight, preferably from 1.0 to 2.5 percent by weight based on the total weight of the composition.
10. A composition according to any one of claims 1 to 9 which further includes one or more non-black organic or inorganic pigments, preferably in an amount of from 0.01 to 10.0 percent by weight, based on the total weight of the composition.
11. The use of a composition according to any claim 1 to 10 for the manufacture of an article.
12. An article adapted to exhibit dark markings in areas irradiated by a laser beam, which article comprises a composition of any one of claims 1 to 10.
13. An article according to claim 12, which is coloured in any one of the colours pink, red, yellow, orange, lime green, lilac, mid to light blue or turquoise.
14. An article according to claim 12 or 13, which is a livestock ear tag.
15. An article as claimed in any one of claims 12 to 14, on which a dark marking is visible.
16. The use of an article according to any one of claims 12 to 15 in a laser marking process, preferably in a laser marking process achieved using a Nd:YAG laser

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operating at a wavelength of either 532 nm or 1064 nm.

17. A method of marking an article with a laser, wherein a visible marking is formed on an article according to any one of claims 12 to 15 by irradiating that article with a laser beam, preferably a laser beam of wavelength either 532 nm or 1064 nm from

5 a Nd:YAG laser.

18. A method of producing an article having laser marked surface portions, which method comprises

(a) providing a polymeric material;

(b) compounding said polymeric material with mica or a micaceous material and a
10 metal sulphide to provide a polymeric composition;

(c) forming an article using the polymeric composition; and

(d) irradiating said article with a laser beam to produce laser marked surface portions on the article.

19. A method according to claim 18, wherein there is a coating comprising a metal

15 oxide on part or whole of the surface of the mica or micaceous material.

20. A method according to claim 19, wherein the metal oxide comprises antimony oxide, titanium oxide and/or tin oxide.

21. A method according to any one of claims 18 to 20, wherein the metal sulphide is selected from the group consisting of cadmium sulphide, iron sulphide, zinc

20 sulphide and mixed sulphides comprising cadmium, iron or zinc as one of the metals.

22. A method according to claim 21, wherein the metal sulphide is zinc sulphide.

23. A method according to any one of claims 18 to 22, wherein the mica or micaceous material is present in an amount ranging from 0.05 to 2 percent by

25 weight, preferably from 0.1 to 0.5 percent by weight, most preferred 0.3±0.1 percent by weight, based on the total weight of the article.

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24. A method according to any one of claims 16 to 20, wherein the polymeric material is a resin selected from the group consisting of polyolefins, polyurethanes, polycarbonates, polyesters, rubber modified monovinylidene, aromatic resins, polyetherimides, polyamides, polyimides, polyester carbonates, polyphenylene sulphides, polyamideimides, polyesteramides, polyether esters, polyetherimide esters, polyarylates, polymethylpentenes, polysulfones, polyethersulfones, polystyrenes, rubber modified high impact polystyrenes, polyoxymethylene, styrene maleic anhydride copolymers, acrylonitrile styrene acrylate copolymers, acrylonitrile butadiene styrene copolymers (ABS), polyphenylene ethers, polyether ketones, chlorinated polymers, fluorinated polymers, and liquid crystal polymers, preferably from the group consisting of polyurethanes, polycarbonates, polyamides, high impact polystyrene, ABS and rubber modified monovinylidene aromatic resins and blends thereof, most preferred is a thermoplastic polyurethane resin.

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25. A method according to any one of claims 18 to 24, wherein the amount of metal sulphide in the composition is sufficient to produce a dark marking on an article moulded from the said composition when it has been irradiated with a laser beam at a radiation level of 5-50A at a frequency of 1 - 100 kHz in the range of 500-2100 nm.

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26. A method according to any one of claims 18 to 25, wherein the amount of metal sulphide ranges from 0.05 to 3 percent by weight, preferably from 1.0 to 2.5 percent by weight, based on the total weight of the composition.

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27. A method according to any one of claims 18 to 26, wherein one or more non-black organic or inorganic pigments, preferably in an amount of from 0.01 to 10.0 percent by weight, based on the total weight of the composition, are also compounded with the polymeric material to provide the composition.

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28. A method according to any one of claims 18 to 27, wherein the article formed in said step (c) is a livestock ear tag.

29. A method according to claim 27 or 28, wherein the article formed in said

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step (c) is coloured pink, red, yellow, orange, lime green, lilac, mid to light blue or turquoise.